

**UNCLASSIFIED**  
**EXHIBIT R-2, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET**

**DATE: February 1999**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROGRAM ELEMENT TITLE: Standards Development**

**(U) COST: (Dollars in Thousands)**

<b>Project Number &amp; Title</b>	<b>FY 1998 Budget</b>	<b>FY 1999 Budget</b>	<b>FY 2000 Estimate</b>	<b>FY 2001 Estimate</b>	<b>FY 2002 Estimate</b>	<b>FY 2003 Estimate</b>	<b>FY 2004 Estimate</b>	<b>FY 2005 Complete</b>	<b>To Program</b>	<b>Total</b>
S1857 Calibration Standards	1,886	1,790	1,578	1,564	1,752	1,820	1,866	1,913	CONT.	CONT.
S2416 Integrated Condition Assessment System (ICAS)	1,886	0	0	0	0	0	0	0	0	1,864
E2310 Flight Polynomials	281	292	287	0	0	0	0	0	0	860
E2311 Stores Planning and Weaponneering Module	6,334	7,271	7,432	7,812	8,493	779	811	842	CONT.	CONT.
E2312 Common Helicopters	0	452	1,442	1,975	2,766	1,213	1,253	1,290	CONT.	CONT.
W0572 Joint Services/Navy Standard Avionics Components and Subsystems	24,657	41,006	63,586*	76,991*	50,223*	25,687*	18,095*	12,147*	CONT.	CONT.
<b>TOTAL</b>	<b>35,044</b>	<b>50,811</b>	<b>74,325</b>	<b>88,342</b>	<b>63,234</b>	<b>29,499</b>	<b>22,025</b>	<b>16,192</b>	<b>CONT.</b>	<b>CONT.</b>
Quantity of RDT&E Articles	3	49	122	69	46	0	0	0	0	289

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Project S1857, Calibration Standards: This project is a Navy-wide program to develop required calibration standards (hardware) in all major measurement technology areas. It funds Navy lead-service responsibilities in the DoD metrology RDT&E program.

(U) Project E2310, Flight Polynomials: The Tactical Automated Mission Planning System (TAMPS) is the CNO designated common automated mission planning system for the Navy. One of the fundamental planning functions of any automated aviation mission planner is the ability to calculate fuel required and performance available corrected for both the aircraft's configuration (weight, drag, speed, etc.) and the environmental factors (altitude, wind, pressure, humidity, etc.) In order to provide accurate performance calculations, performance polynomials (drop-in polynomials) reflecting the performance delineated in the approved NATOPS manuals must be developed, implemented and maintained for each supported type/model/series aircraft. The following type/model/series aircraft are supported by this PE: F/A-18 (400), F/A-18 (402), C-2R, E-2C (Block II), F-14 B/D, AH-1W, UH-1N, CH-46E, H-60F/H, S-3B, EA-6B, AV-8B (406), AV-8 (408), T-45, and KC-130 F/R/T. The developed drop-in performance polynomials will initially be implemented in Naval Portable Flight Planning Software (N-PFPS).

\*The increase in this Project Unit is from PE 0604574N – Navy Tactical Computer Resources, Project Unit W0845 – AN/AYK-14 and POM 00 increase for AMC&D to support hardware processing for F/A-18E/F Tactical F requirements. Project Unit W0845 is combined with PE 0604215N, Project Unit W0572 beginning FY00. With this combination, Flight Avionics Displays (FAD) becomes Advanced Mission Computer and Displays (AMC&D).

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**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROGRAM ELEMENT TITLE: Standards Development**

(U) Project E2311, Stores Planning and Weaponing Module: The Navy Stores Planning and Weaponing (NSPW) application is an incrementally developed software product that will provide a certified unit level weaponing capability for Navy aircraft in the Joint Mission Planning Segment (JMPS). NSPW will provide current planning results for specific aircraft type and model that include store/weapon carriage authorizations, restrictions and limitations; store/weapon delivery restrictions and limitations (including safe-escape aspects of the planned delivery profile); and will provide mandatory weapons employment planning information including weapons optimization. Selected functions of the Automated Tactical Manual Supplement (ATACS) will be rehosted in a Windows NT environment and integrated with Joint Munitions Effectiveness Manual (JMEM) software, and mission planning functions to comprise NSPW. F/A-18A/B/C/D is the first platform to be introduced in the first increment of NSPW as a stand alone product.

(U) Project E2312, Common Helicopters: The Tactical Automated Mission Planning System (TAMPS) is the CNO designated common automated mission planning system for the Navy. Automated mission planning systems to date have been developed targeting the planning requirements for fixed-wing aircraft, while the unique planning requirements for helicopters have not been addressed. The unique and enhanced automated mission planning requirements that must be developed and implemented for helicopters include: data loading, an enhanced route editor (serpentine routing, hover, etc.) manipulation of higher fidelity (smaller scale) maps and imagery, enhanced performance tools (performance in and out of ground effect, performance degradation due to atmospheric conditions & elevation), and enhanced fidelity of threat analyses. The following type/model/series aircraft are supported by this PE: AH-1W, UH-1N, H-46D/E, H-53D/E, H-60B/F/H/R, and V-22. The developed common helicopter functionality will initially be implemented in Naval Portable Flight Planning Software (N-PFPS). The fully developed and Fleet released common helicopter functionality will migrate to the Joint Mission Planning Segment (JMPS) after JMPS initial fielding.

(U) Project W0572, Joint Services/Navy Standard Avionics Components and Subsystems: This project provides for the identification, design, development, test, evaluation and qualification of standard avionics for Navy use, and wherever practicable, use across all Services and Foreign Military Sales. Such air combat electronics developments include communications, navigation, flight avionics, safety systems, and flight mission information systems for both forward fit and retrofit aircraft. These efforts continue to maintain federated systems while encouraging transition of procurements to support a modular system for enhanced performance and affordability. Consideration is given up front to reduce acquisition costs through larger procurement quantities that satisfy multi-aircraft customer requirements and that reduce life cycle costs in the areas of reliability, maintainability, and training. Several examples of past successful tasks under this project include the Standard Central Air Data Computer, Solid State Barometric Altimeter, and Downed Aircraft Location System, jointly developed with the Air Force and Army and currently installed on numerous Navy, Air Force and Army aircraft. This project also funds Navy chairmanship and participation in the Joint Services Review Committee (JSRC) for Avionics Standardization. The RDT&E Articles include Tactical Aircraft Moving Map Capability (TAMMAC) Engineering & Manufacturing Development (E&MD) units, Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) E&MD units, Advanced Mission Computer & Displays (AMC&D) E&MD units which include Display Processors and Mission Processors, Display Heads, 8 x 10 displays, Fiber Channel Switches, and technology roll kits.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: These programs are funded under ENGINEERING & MANUFACTURING DEVELOPMENT because they encompass engineering and manufacturing development of new end-items prior to production approval decision.

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## EXHIBIT R-2a, FY 2000/2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: September 1998

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER: S1857

PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT

PROJECT TITLE: CALIBRATION STANDARDS

(U) COST: (Dollars in Thousands)

<u>Project Number &amp; Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Estimate</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
S1857 CALIBRATION STANDARDS	1,886	1,790	1,578	1,564	1,752	1,820	1,866	1,913	CONT.	CONT.
<b>TOTAL</b>	<b>1,886</b>	<b>1,790</b>	<b>1,578</b>	<b>1,564</b>	<b>1,752</b>	<b>1,820</b>	<b>1,866</b>	<b>1,913</b>	<b>CONT.</b>	<b>CONT.</b>

Quantity of RDT&E Articles

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides the engineering development of measurement reference/calibration standards (hardware) required to ensure measurement accuracy in support/maintenance of new advanced technology weapon systems and associated support equipment. These individual tasks have been assigned to the Navy as lead-service responsibilities as part of a Joint Service/DoD program.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS:

(U) (\$0.580) Completed the development of 2 calibration standards (hardware) in support of Joint Service Automation and radars (2GHz) to millimeter-wave).

(U) (\$0.981) Began and completed development of 4 calibration standards (hardware) in support of fiber optic communications systems (2 standards), shipboard sensors, and high current circuit breakers.

(U) (\$0.325) Began development (to 50% completion) of 2 calibration standards (hardware) in support of laser tracker systems, and system electromagnetic vulnerability measurements.

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**DATE: September 1998**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROJECT NUMBER: S1857**

**PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT**

**PROJECT TITLE: CALIBRATION STANDARDS**

**2. FY 1999 PLAN:**

(U) (\$0.198) Complete the development of 1 calibration standard (hardware) in support of system electromagnetic vulnerability measurement.

(U) (\$0.252) Continue development (to 66% completion) of 1 calibration standard (hardware) in support of laser tracking systems.

(U) (\$1.340) Begin development (to 50% completion) of 6 calibration standards (hardware) in support of target designators laser, underwater acoustic systems, Infrared (1.52 u) systems, optical systems, radar measurements, and multi-function electrical test equipment.

**3. FY 2000 PLAN:**

(U) (\$0.839) Complete the development of 3 calibration standards (hardware) in support of target designators, laser tracker systems and radar measurements.

(U) (\$1.739) Continue development (to 66% completion) of 4 calibration standards (hardware) in support of underwater acoustic systems, Infrared (1.52 u) systems, optical systems, and multi-function electrical test equipment.

**4. FY 2001 PLAN:**

(U) (\$0.854) Complete development of 4 calibration standards (hardware) in support of underwater acoustic systems, Infrared (1.52 u) systems, and optical systems and multi-function electrical test equipment.

(U) (\$0.710) Begin development (to 33% completion) of 3 calibration standards (hardware) in support of shipboard pressure gauges, aircraft and shipboard electronic system maintenance, and fiber optic communication systems.

(U) (\$0.504) Begin development (to 33% completion) of 6 calibration standards (hardware) in support of microwave systems and fiber optic communication systems.

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**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROJECT NUMBER: S1857**

**PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT**

**PROJECT TITLE: CALIBRATION STANDARDS**

**(U) B. PROGRAM CHANGE SUMMARY**

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 1999 President's Budget:	1.886	1.790	1.578	1.564
(U) Appropriated Value:	1.905			
(U) Adjustments from Pres Budget:				
a. Minor Pricing Adjustments	-0.019	-0.009	- 0.084	- 0.093
(U) FY 2000/2001 OSD/OMB Budget Submit:	1.904	1.799	1.662	1.566

**CHANGE SUMMARY EXPLANATION:**

(U) Funding: FY 1998 reduction of \$0.019M, FY 2000 reduction of \$0.009M, and FY 2001 reduction of \$0.091M are due to minor pricing adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

**(U) C. OTHER PROGRAM FUNDING SUMMARY**

<u>Appn</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Estimate</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
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Not applicable.

**Related RDT&E**

(U) P.E. 0604215N Joint Services/Navy Standard Avionics Components and Subsystems

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**PROGRAM ELEMENT: 0604215N**

**PROJECT NUMBER: S1857**

**PROGRAM ELEMENT TITLE: STANDARDS DEVELOPMENT**

**PROJECT TITLE: CALIBRATION STANDARDS**

(U) C. ACQUISITION STRATEGY: Not applicable.

(U) D. SCHEDULE PROFILE: Not applicable.

FY 1998

FY 1999

FY 2000

FY 2001

(U) Program Milestones

(U) Engineering Milestones

(U) T&E Milestones

(U) Contract Milestones

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EXHIBIT R-3, FY 2000/2001 RDT&E,N COST ANALYSIS

DATE: September 1998

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER: S1857

PROJECT TITLE: CALIBRATION STANDARDS

<u>Cost Categories:</u>	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Primary Hardware Development		NSWC Nwas	1.296	1.210	10/98	1.035	10/99	0.993	10/00	CONT.	CONT.	
<b>Subtotal Project Development</b>			<b>1.296</b>	<b>1.210</b>		<b>1.035</b>		<b>0.993</b>		<b>CONT.</b>	<b>CONT.</b>	
Remarks												
Naval Surface Warfare Center (NSWC)												
Naval Warfare Assessment Station (Nwas)												
Total Prior Yrs Cost = FY98 only												
<b>Subtotal Support</b>			<b>0</b>	<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>	<b>0</b>	

Remarks

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EXHIBIT R-3, FY 2000/2001 RDT&E,N COST ANALYSIS

DATE: September 1998

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER: S1857

PROJECT TITLE: CALIBRATION STANDARDS

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Subtotal Test & Evaluation			0	0		0		0		0	0	
Remarks												
Government Engineering Support		NSWC Nwas	0.235	0.223	10/98	0.210	10/99	0.202	10/00	CONT.	CONT.	
Program Management Support		NSWC Nwas	0.329	0.337	10/98	0.313	10/99	0.349	10/00	CONT.	CONT.	
Travel		NSWC Nwas	0.026	0.020	10/98	0.020	10/99	0.020	10/00	CONT.	CONT.	
Subtotal Management			0.608	0.583		0.496		0.479		CONT.	CONT.	
Remarks												
Naval Surface Warfare Center (NSWC)												
Naval Warfare Assessment Station (Nwas)												
Total Prior Yrs Cost = FY98 only												
Total Cost			1.886	1.790		1.578		1.564		CONT.	CONT.	

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PROGRAM ELEMENT: 0604215N

PROGRAM ELEMENT TITLE: Standards Development

(U) COST: (Dollars in Thousands)

<u>Project Number &amp; Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Estimate</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
<b>E2310 Flight Polynomials *</b>	<b>281</b>	<b>292</b>	<b>287</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>860</b>

Quantity of RDT&E Articles

\* Previously funded under W2310.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Tactical Automated Mission Planning System (TAMPS) is the CNO designated common automated mission planning system for the Navy. One of the fundamental planning functions of any automated aviation mission planner is the ability to calculate fuel required and performance available corrected for both the aircraft's configuration (weight, drag, speed, etc.) and the environmental factors (altitude, wind, pressure, humidity, etc.) In order to provide accurate performance calculations, performance polynomials (drop-in polynomials) reflecting the performance delineated in the approved NATOPS manuals must be developed, implemented and maintained for each supported type/model/series aircraft. The following type/model/series aircraft are supported by this PE: F/A-18 (400), F/A-18 (402), C-2R, E-2C (Block II), F-14 B/D, AH-1W, UH-1N, CH-46E, H-60F/H, S-3B, EA-6B, AV-8B (406), AV-8 (408), T-45, and KC-130 F/R/T. The developed drop-in performance polynomials will initially be implemented in Naval Portable Flight Planning Software (N-PFPS).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1998 ACCOMPLISHMENTS:

- (U) (\$281) The development, certification, and software release of drop-in performance polynomials were commenced. Performance polynomials were developed for: F/A-18 (400), F/A-18 (402), C-2R, E-2C (Block II), CH-46E, AH-1W, H-60F/H, and UH-1N.

2. (U) FY 1999 PLAN:

- (U) (\$292) Continue the development, certification, and release of drop-in performance polynomials. The following performance polynomials are scheduled: F-14B/D, F/A-18E/F, S-3B, EA-6B, T-45, and H-53E.

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DATE: February 1999

BUDGET ACTIVITY: 5      PROGRAM ELEMENT: 0604215N  
PROGRAM ELEMENT TITLE: Standards Development

(U) PROGRAM ACCOMPLISHMENTS AND PLANS: (continued)

3. (U) FY 2000 PLAN:

- (U) (\$287) Continue the development, certification, and release of drop-in performance polynomials. The following performance polynomials are scheduled: KC-130F/R/T, V-22, KC-130J, AV-8B (406), AV-8B (408), and P-3C.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	289	293	291
(U) Appropriated Value:	298	293	
(U) Adjustments from President's Budget:	-8	-1	-4
(U) FY 2000 President's Budget Submit:	281	292	287

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1998 decrease reflects an -\$8 thousand decrease for an SBIR Reduction.

FY 1999 decrease reflects a -\$1 thousand decrease for Revised Economic Assumptions.

FY 2000 decrease reflects a -\$4 thousand decrease for minor inflation adjustments.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

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DATE: February 1999

**BUDGET ACTIVITY: 5**      **PROGRAM ELEMENT: 0604215N**  
**PROGRAM ELEMENT TITLE: Standards Development**

### (U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Estimate</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
OPN	15,280	23,529	20,769	15,480	19,078	13,621	13,336	14,342	CONT.

### Related RDT&E

(U) P.E. 0604231N Mission Planning (E2213)

(U) D. ACQUISITION STRATEGY: This is a co-operative development between the USN and USAF.

### (U) E. SCHEDULE PROFILE

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>To Complete</u>
(U) Program Milestones	2Q/98 3.0 Release	2Q/99 3.1 Release	2Q/00 3.2 Release	2Q/01 3.3 Release
(U) Engineering Milestones				
(U) T&E Milestones				
(U) Contract Milestones				

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**DATE: February 1999**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROJECT NUMBER: E2311**

**PROGRAM ELEMENT TITLE: Standards Development**

**PROJECT TITLE: Stores Planning and  
Weaponneering Module**

**(U) COST: (Dollars in Thousands)**

<u>Project Number &amp; Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Estimate</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
<b>E2311 Stores Planning Weaponneering Module *</b>	<b>6,334</b>	<b>7,271</b>	<b>7,432</b>	<b>7,812</b>	<b>8,493</b>	<b>779</b>	<b>811</b>	<b>842</b>	<b>CONT.</b>	<b>CONT.</b>
<b>TOTAL</b>	<b>6,334</b>	<b>7,271</b>	<b>7,432</b>	<b>7,812</b>	<b>8,493</b>	<b>779</b>	<b>811</b>	<b>842</b>	<b>CONT.</b>	<b>CONT.</b>

Quantity of RDT&E Articles

\* Previously funded under W2311

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Navy Stores Planning and Weaponneering (NSPW) application, previously known as Stores Planning and Weaponneering Module (SPWM), is an incrementally developed software product that will provide a certified unit level weaponneering capability for Navy aircraft in the Joint Mission Planning Segment (JMPS). NSPW will provide current planning results for specific aircraft type and model that include store/weapon carriage authorizations, restrictions and limitations; store/weapon delivery restrictions and limitations (including safe-escape aspects of the planned delivery profile), and will provide mandatory weapons employment planning information including weapons optimization. Selected functions of the Automated Tactical Manual Supplement (ATACS) will be rehosted in a Windows NT environment and integrated with Joint Munitions Effectiveness Manual (JMEM) software, and mission planning functions to comprise NSPW. F/A-18A/B/C/D is the first platform to be introduced in the first increment of NSPW as a standalone product.

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PROGRAM ELEMENT: 0604215N

PROJECT NUMBER: E2311

PROGRAM ELEMENT TITLE: Standards Development

PROJECT TITLE: Stores Planning and  
Weaponering Module

### (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

#### 1. (U) FY 1998 ACCOMPLISHMENTS:

- (U) (\$6,334) Using Object Oriented software design methodology, completed Conceptualization Phase for NSPW standalone product. During Conceptualization Phase held Fleet reviews and assessed Fleet requirements, developed software prototypes including Human Machine Interface (HMI) prototype and engineering prototype for communication interfaces, developed NSPW documentation (Concept of Operations, Quality Assurance Plan, Systems/Subsystems Specification, draft Configuration Management Plan, draft Software Development Plan), established NSPW software development lab, became proficient in software development tool usage, completed first phase risk assessment, analyzed HMI software tools, and participated in JMPS technical interchanges. Began NSPW Elaboration Phase: conducted Fleet review and analyzed Fleet inputs; specified NSPW's context, functions, and scenarios; elaborated NSPW's scenarios (sequence diagrams) and completed a draft of the system's domain model (key classes and their relationships); began scenario walkthroughs. Released Automated Tactical Manual Supplement (ATACS) version 1.2. Began ATACS version 2.0 requirements definition, completed software builds, conducted Internal Test Readiness Review (ITRR), External Test Readiness Review (ETRR), and began Certification Testing.

#### 2. (U) FY 1999 PLAN:

- (U) (\$7,150) Continue NSPW Elaboration Phase begun in FY98 by completing scenario walkthroughs, updating risk assessment, preparing and conducting F/A-18A/B/C/D Elaboration Status Review, and participating in JMPS technical interchanges. Complete the system's domain model. Begin NSPW design: hold Fleet Review and assess Fleet input, conduct architectural planning by allocating layers and partitions of the NSPW architecture, creating the Architectural Prototype, creating the Architectural Baseline, and identifying the risk of each key architectural interface. Initiate Tactical Design by selecting the major mechanisms and idioms. Perform Release Planning by prioritizing scenarios, grouping scenarios into iterations, and creating a task plan; conduct a status review, participate in JMPS technical interchanges, prepare and present the Design Review. Enter NSPW Construction Phase by beginning Construction Iterations. Complete ATACS version 2.0 Certification Testing, hold Technical Information Review Board (TIRB) and Release Board, duplicate and distribute CDs. Begin development of ATACS version 2.1.
- (U) (\$121) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

#### 3. (U) FY 2000 PLAN:

- (U) (\$7,432) Continue Standalone F/A-18 NSPW Construction Phase. Begin analysis and design of load capability for CH-46, CH-53, HH-60H, KC-130, T-45, UH-1 and V-22 aircraft. Complete development and release F/A-18 ATACS version 2.1. Begin conceptualization and transition phases for full capability for AH-1 and AV-8D aircraft.

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**EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET**

**DATE: February 1999**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROGRAM ELEMENT TITLE: Standards Development**

**PROJECT NUMBER: E2311**

**PROJECT TITLE: Stores Planning and  
Weaponneering Module**

**(U) B. PROGRAM CHANGE SUMMARY**

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	7,451	7,295	7,559
(U) Appropriated Value:	7,679	7,295	
(U) Adjustments from President's Budget:	-1,117	-24	-127
(U) FY 2000 President's Budget Submit:	6,334	7,271	7,432

**CHANGE SUMMARY EXPLANATION:**

(U) Funding: FY 1998 net decrease of -\$1,117 reflects a decrease of -\$875 thousand for a Below Threshold Reprogramming and a decrease of -\$242 thousand for a SBIR Reduction.

FY 1999 net decrease of -\$24 thousand reflects minor pricing adjustments.

FY 2000 net decrease of -\$127 thousand reflects minor pricing adjustments.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

**(U) C. OTHER PROGRAM FUNDING SUMMARY**

<u>Appn</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Estimate</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
OPN	15,280	23,529	20,769	15,480	19,078	13,621	13,336	14,342	CONT.

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## EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER: E2311

PROGRAM ELEMENT TITLE: Standards Development

PROJECT TITLE: Stores Planning and  
Weaponneering Module

### Related RDT&E

(U) P.E. 0604231N Mission Planning (E2213)

(U) D. ACQUISITION STRATEGY: Navy Stores Planning and Weaponneering (NSPW) software applications are being built by a software development team composed of government and contractor entities. Domain expertise in the areas of platform specific stores compatibility and weapons separation, load validation, drag counts, fuzing, delivery and safe escape, unguided trajectory modeling, guided weapons models, weapon effects, and aerodynamic flutter is provided by engineers to advise a software development team comprised of USG and contractor software developers. NSPW management and the test team for IV&V and Certification Testing are also combined teams of USG and contractor entities. Contractor efforts are procured predominately through fixed-price GSA or BPA contracts.

### (U) E. SCHEDULE PROFILE

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) Program Milestones			
3Q/98 Proj Definition Review		1Q/99 Iteration 1 Review 2 Q/99Sys Architecture Review 3Q/99 Iteration 2 Review 3Q/99 Iteration 3 Review 4 Q/99 Construction Readiness Review	2Q/00 Iteration 4 Review 4Q/00 Iteration 5 Review
(U) Engineering Milestones			
2 Q/98 Conceptualization		1 Q/99 Elab. Phase	1 Q/00 Construction Phase
3Q/98 Conceptualization		2 Q/99 Elab. Phase	2 Q/00 Construction Phase
3Q/98 Elab. Phase		3 Q/99 Elab. Phase	3 Q/00 Construction Phase
4Q/98 Elab. Phase		4 Q/99 Elab. Phase	4 Q/00 Construction Phase
(U) T&E Milestones			
			2 Q/00 FQT Iteration 3 Q/00 Certification Iterations
(U) Contract Milestones			
1 Q/98 DCS GSA 1 Q/99 Contract Award		2 Q/99 DCS GSA 2 Q/99 Contract Award	1 Q/00 DCS GSA 1 Q/00 Contract Award

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## EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER:

E2311

PROJECT TITLE:

Stores

Planning

<u>Cost Categories:</u>	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Software Development	WX	NAWCAD Pax Riv	2,891	2,487	12/98	2,413	10/99	4,767	17,923	
Software Development	GSA/FP	DCS Inc., Pax Riv	1,204	2,240	1/99	2,455	12/99	CONT	CONT	17,873
Program Management Support	C/CPFF	Veda, Pax Riv	168	86	2/99	89	12/99	CONT	CONT	847
Software Development	GSA/FP	Rational, Pax Riv, MD	49	0	12/98	0	12/99			49
Software Development	C/CPFF	ISI, Pax Riv, MD	66						66	66
Software Development	GSA/FP	ISI, Pax Riv, MD	66	193	1/99	201	12/99	CONT	CONT	1,592
Software Development	C/CPFF	PRB, Pax Riv, MD	434						434	434
Software Development	GSA/FP	PRB, Pax Riv, MD		650	1/99	676	12/99	CONT	CONT	5,134
Program Management Support	C/CPFF	WBB, Pax Riv, MD	117							117
Systems Engineering	GSA/FP	WBB, Pax Riv, MD	164	33	9/99	197	12/99	CONT	CONT	1,504
<b>Subtotal Project Development</b>			<b>5,159</b>	<b>5,689</b>		<b>6,031</b>		<b>CONT</b>	<b>CONT</b>	<b>27,616</b>
Remarks:										
<b>Subtotal Support</b>			<b>0</b>	<b>0</b>		<b>0</b>		<b>0</b>	<b>0</b>	

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## EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER:

W2311

PROJECT TITLE:

Stores

Planning

<u>Cost Categories:</u>	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Developmental Test & Evaluation	C/FP	Mantech, Pax Riv, MD	652	439	1/99	443	12/99	CONT	CONT	4,751
	C/CPFF	Veda, Pax Riv, MD	0	280	2/99	291	12/99	CONT	CONT	3,095
<b>Subtotal Test &amp; Evaluation</b>			<b>652</b>	<b>719</b>		<b>734</b>		<b>CONT</b>	<b>CONT</b>	<b>7,846</b>
Remarks:										
Misc.	WX	Various	523	742		667		CONT	CONT	
<b>Subtotal Management</b>			<b>523</b>	<b>742</b>		<b>667</b>		<b>0</b>	<b>0</b>	
SBIR Assessment				121						
Remarks:										
<b>Total Cost</b>			<b>6,334</b>	<b>7,271</b>		<b>7,432</b>		<b>CONT</b>	<b>CONT</b>	

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## EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER: E2312

PROGRAM ELEMENT TITLE: Standards Development

PROJECT TITLE: Common Helicopters

(U) COST: (Dollars in Thousands)

<u>Project Number &amp; Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Estimate</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
E2312 Common Helicopters *	0	452	1,442	1,975	2,766	1,213	1,253	1,290	CONT.	CONT.
<b>TOTAL</b>	<b>0</b>	<b>452</b>	<b>1,442</b>	<b>1,975</b>	<b>2,766</b>	<b>1,213</b>	<b>1,253</b>	<b>1,290</b>	<b>CONT.</b>	<b>CONT.</b>

Quantity of RDT&E Articles

\* Previously funded under W2312

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Tactical Automated Mission Planning System (TAMPS) is the CNO designated common automated mission planning system for the Navy. Automated mission planning systems to date have been developed targeting the planning requirements for fixed-wing aircraft, while the unique planning requirements for helicopters have not been addressed. The unique and enhanced automated mission planning requirements that must be developed and implemented for helicopters include: data loading, an enhanced route editor (serpentine routing, hover, etc.) manipulation of higher fidelity (smaller scale) maps and imagery, enhanced performance tools (performance in and out of ground effect, performance degradation due to atmospheric conditions & elevation), and enhanced fidelity of threat analyses. The following type/model/series aircraft are supported by this PE: AH-1W, UH-1N, H-46D/E, H-53D/E, H-60B/F/H/R, and V-22. The developed common helicopter functionality will initially be implemented in Naval Portable Flight Planning Software (N-PFPS). The fully developed and Fleet released common helicopter functionality will migrate to the Joint Mission Planning System (JMPS) after JMPS initial fielding.

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**EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET**

**DATE: February 1999**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROJECT NUMBER: E2312**

**PROGRAM ELEMENT TITLE: Standards Development**

**PROJECT TITLE: Common Helicopters**

**(U) PROGRAM ACCOMPLISHMENTS AND PLANS:**

**1. (U) FY 1998 ACCOMPLISHMENTS:**

- (U) (\$0K) N/A

**2. (U) FY 1999 PLAN:**

- (U) (\$445) Develop, test and release software version 3.1 for common helicopter data loading. Conduct an analyses of common helicopter requirements to be implemented in subsequent N-PFPS and JMPS.
- (U) (\$7) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

**3. (U) FY 2000 PLAN:**

- (U) (\$1,442) Commence development of common helicopter functionality as identified in the FY-99 requirements analyses. Release version 4.0 as N-PFPS.

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER: E2312

PROGRAM ELEMENT TITLE: Standards Development

PROJECT TITLE: Common Helicopters

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	0	453	1,468
(U) Appropriated Value:		453	
(U) Adjustments from President's Budget:		-1	-26
(U) FY 2000 President's Budget Submit:	0	452	1,442

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999 net decrease results from a -\$1 thousand balancing adjustment.

FY 2000 net decrease of -\$26 reflects a decrease for minor pricing adjustments.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Estimate</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
OPN	15,280	23,529	20,769	15,480	19,078	13,621	13,336	14,342	CONT.

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER: E2312

PROGRAM ELEMENT TITLE: Standards Development

PROJECT TITLE: Common Helicopters

Related RDT&E

(U) P.E. 0604231N Mission Planning (E2213)

(U) D. ACQUISITION STRATEGY - NOT APPLICABLE.

(U) E. SCHEDULE PROFILE

FY 1998

FY 1999

FY 2000

To Complete

(U) Program Milestones

2 Q/99 3.1 Release

2 Q/00 3.2 Release

(U) Engineering Milestones

(U) T&E Milestones

1 Q/99 OT

1 Q/00 OT

(U) Contract Milestones

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## EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: February 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER:

E2312

PROJECT TITLE:

Common Helicopters

<u>Cost Categories:</u>	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Software Development	WX	USAF, Eglin AFB, FL		404	10/98	1,413	10/99	CONT.	CONT	
<b>Subtotal Project Development</b>			<b>0</b>	<b>404</b>		<b>1,413</b>		<b>CONT</b>	<b>CONT</b>	
Remarks										
Government Engineering Support	WX	SPAWAR, Det/Philadelphia	0	41	10/98	29	10/99	CONT	CONT	
<b>Subtotal Support</b>			<b>0</b>	<b>41</b>		<b>29</b>		<b>CONT</b>	<b>CONT</b>	
Remarks										
<b>Subtotal Test &amp; Evaluation</b>			<b>0</b>	<b>0</b>		<b>0</b>		<b>0</b>	<b>0</b>	
Remarks										
<b>Subtotal Management</b>			<b>0</b>	<b>0</b>		<b>0</b>		<b>0</b>	<b>0</b>	
SBIR Assessment				7						
Remarks										
<b>Total Cost</b>			<b>0</b>	<b>452</b>		<b>1,442</b>		<b>CONT</b>	<b>CONT</b>	

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**EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET**

**DATE: February 1999**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROGRAM ELEMENT TITLE: Standards Development**

**PROJECT NUMBER: W0572**

**PROJECT TITLE: Joint Services/Navy Standard Avionics Components and Subsystems**

**(U) COST: (Dollars in Thousands)**

<u>Project Number &amp; Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W0572 Joint Services/Navy Standard Avionics Components and Subsystems	24,657	41,006	63,586*	76,991*	50,223*	25,687*	18,095*	12,147*	CONT.	CONT.
<b>TOTAL</b>	<b>24,657</b>	<b>41,006</b>	<b>63,586</b>	<b>76,991</b>	<b>50,223</b>	<b>25,687</b>	<b>18,095</b>	<b>12,147</b>	<b>CONT.</b>	<b>CONT.</b>
Quantity of RDT&E Articles	3	49	122	69	46	0	0	0	0	289

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Services/Navy Standard Avionics Components and Subsystems project provides for the identification, design, development, test, evaluation and qualification of standard avionics and mandatory safety improvements for Navy use, and wherever practicable, use across all services. Standard avionics systems under development include the Ground Proximity Warning System (GPWS) for Tactical Aircraft (TACAIR) CAT II, Terrain Awareness Warning System (TAWS) in TACAIR aircraft, Low Probability of Intercept Altimeter (LPIA), Tactical Aircraft Moving Map Capability (TAMMAC), Formation Collision Avoidance System (FCAS), Communication Navigation Surveillance Air Traffic Management (CNS/ATM), Flight Avionics Displays (FAD) in FY98 and FY99 becomes Advanced Mission Computer & Displays (AMC&D) in FY00. Participation in Human Factors Quality Management Board (HFQMB) ensures Navy safety upgrades and mandatory safety improvements for naval aircraft.

The RDT&E Articles include Tactical Aircraft Moving Map Capability (TAMMAC) Engineering & Manufacturing Development (E&MD) units, Communication Navigation Surveillance/Air Traffic Management (CNS/ATM) E&MD units, AMC&D E&MD units which include Display Processors and Mission Processors, Display Heads, 8 x 10 displays, Fiber Channel Switches, and technology roll kits.

\*The increase in this Project Unit is from PE 0604574N - Navy Tactical Computer Resources, Project Unit W0845 - AN/AYK-14 and POM 00 increase for AMC&D to support hardware processing for F/A-18E/F Tactical F requirements. Project Unit W0845 is combined with PE 0604215N, Project Unit W0572 beginning FY00. With this combination, Flight Avionics Displays (FAD) becomes Advanced Mission Computer and Displays (AMC&D).

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**EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET**

**DATE: February 1999**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROGRAM ELEMENT TITLE: Standards Development**

**PROJECT NUMBER: W0572**

**PROJECT TITLE: Joint Services/Navy Standard  
Avionics Components and  
Subsystems**

**(U) PROGRAM ACCOMPLISHMENTS AND PLANS:**

**1. (U) FY 1998 ACCOMPLISHMENTS:**

- (U) (\$2,821) Safety: Continued with integration, testing, and deficiency correction for the GPWS CAT II installed in the F/A-18 A/BC/D/E/F aircraft.
- (U) (\$4,648) Continued development of the LPIA program. Conducted Hardware and Software Critical Design Reviews (CDR).
- (U) (\$8,511) Conducted CDR and continued development effort of the TAMMAC program. Received first asset deliveries, continued F/A-18, AV-8B, and TAMPS integration efforts, began qualification testing, and initiated combined DT/OT on the F-18 C/D.
- (U) (\$7,330) Developed acquisition documentation, achieved Milestone II decision, awarded 845 Other Transaction Agreement (OTA), and completed Systems Requirements Review (SRR).
- (U) (\$1,347) Continued to support the JSRC tri-service coordination to promote commonality and joint programs with focus on interoperability/connectivity communications and CNS/ATM. Supported and participated in Avionics Operational Advisory Group (OAG) panels and HFQMB.

**2. (U) FY 1999 PLAN:**

- (U) (\$ 3,175) Complete combined DT/OT and commence TECHEVAL for the LPIA program.
- (U) (\$ 8,819) Complete qualification testing, continue F/A-18, AV-8B and TAMPS integration efforts, conduct operational assessments, complete combined DT/OT on the F-18 C/D, and conduct TECHEVAL on the TAMMAC program.
- (U) (\$17,360) Conduct CDR and continue development and integration of FAD for F/A-18 E/F. Completed Preliminary Design Review (PDR) for FAD. Integrate AV-8B into the AMC&D program.
- (U) (\$ 1,350) Continue to support the JSRC tri-service coordination to promote commonality and joint programs with focus on interoperability/connectivity communications and CNS/ATM. Support and participate in Avionics OAG panels and HFQMB.

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**EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET**

**DATE: February 1999**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROGRAM ELEMENT TITLE: Standards Development**

**PROJECT NUMBER: W0572**

**PROJECT TITLE: Joint Services/Navy Standard  
Avionics Components and  
Subsystems**

- (U) (\$ 1,423) Safety: Continue with deficiency correction of the GPWS CAT II in the F/A-18 C/D/E/F aircraft.
- (U) (\$ 2,232) Safety: Begin systems integration and software development of the Terrain Awareness Warning System (TAWS) with the TAMMAC Digital Map on the F/A-18 to increase the GPWS operational envelope and complete TAWS PDR for F/A-18 OFP 17C/18E.
- (U) (\$ 465) Safety: Begin investigation of system technical alternatives for the Formation Collision Avoidance System (FCAS).
- (U) (\$ 5,351) Award development contracts and complete PDRs for Required Navigation Performance (RNP-4), a software and hardware modification to Embedded Global Positioning System/Initial Navigation System (EGI) to increase integrity of navigation solution to levels acceptable to FAA and International Civil Aviation Organization (ICAO), and Mode S (type of data link, mode (S)elect) to enable required mandatory operations with desired improvements for commercial derivative and tactical naval aircraft for CNS/ATM.
- (U) (\$ 831) Portion of extramural program reserved for Small Business Innovative Research assessment in accordance with 15 USC 638.

**3. (U) FY 2000 PLAN:**

- (U) (\$ 320) Safety: Complete deficiency corrections of the GPWS CAT II in the F/A-18 C/D (15C/16E) OFP aircraft.
- (U) (\$ 926) Complete TECHEVAL for the LPIA program. Commence and complete OPEVAL. Achieve Milestone III decision
- (U) (\$3,760) Complete F/A-18, AV-8B and TAMPS integration efforts and conduct OPEVAL on the TAMMAC program.
- (U) (\$45,173) Award development contract, conduct hardware integration, design verification testing/qualification, and reliability development testing (RDT) of baseline AMC&D (formerly FAD) for the F/A-18E/F and AV-8B programs. Begin DT-IIA for F/A-18 and AV-8B. Begin development of 8 x 10 display and Fiber Channel Switch phase of the program.
- (U) (\$1,360) Continue to support the JSRC tri-service coordination to promote commonality and joint programs with focus on interoperability/connectivity communications and CNS/ATM. Support and participate in Avionics OAG panels and HFQMB.
- (U) (\$2,386) Safety: Complete analysis of alternatives, award development contract, and complete PDR for FCAS.

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**EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET**

**DATE: February 1999**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROGRAM ELEMENT TITLE: Standards Development**

**PROJECT NUMBER: W0572**

**PROJECT TITLE: Joint Services/Navy Standard  
Avionics Components and  
Subsystems**

- (U) (\$3,600) Safety: Complete CDR of the TAWS for F/A-18 OFP 17C/18E and commence DT.
- (U) (\$1,090) Initiate and complete TAMMAC/Joint Mission Planning Systems (JMPS) Functional Requirements Document, SRR, and PDR/CDR, and begin software coding.
- (U) (\$1,513) Conduct TAMPS Mission Planning Module Integration.
- (U) (\$3,458) Complete CDRs for VDL Mode 3, RNP-4 and Mode S to ensure required access for commercial derivative and tactical naval aircraft for CNS/ATM.

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**UNCLASSIFIED****EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET****DATE: February 1999****BUDGET ACTIVITY: 5****PROGRAM ELEMENT: 0604215N****PROJECT NUMBER: W0572****PROGRAM ELEMENT TITLE: Standards Development****PROJECT TITLE: Joint Services/Navy Standard  
Avionics Components and  
Subsystems****(U) B. PROGRAM CHANGE SUMMARY**

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	25,218	42,147	29,600
(U) Appropriated Value:	24,677	42,147	
(U) Adjustments from 1999 President's Budget: (561)		(1,141)	33,986
(U) FY 2000 President's Budget Submit:	24,657	41,006	63,586

**CHANGE SUMMARY EXPLANATION:**

(U) Funding: FY98 reflects a reduction of \$459 thousand for Small Business Innovative Research (SBIR) assessment and a reduction of \$102 thousand for economic adjustments. FY 1999 reflects a reduction of \$1,141 thousand for congressional undistributed reductions. FY 2000 net increase of \$33,986 thousand reflects an increase of \$9,803 thousand via a realignment from PE 0604574N, Project Unit W0845, for the Advanced Mission Computer (AMC), and an increase of \$25,900 thousand for AMC&D to support hardware processing for F/A-18E/F requirements. These increases are partially offset by a decrease of \$663 thousand for below benchmark expenditures and a decrease of \$1,054 thousand for pricing adjustments.

(U) Schedule: Consolidated FAD and AMC (PE 0604574N, W0845) budgets and established the following baseline: FY 1998 reflects a change in FAD MS II from 2Q 98 to 3Q 98 as a result of the change from an ACAT III to an ACAT II designation. The change in FAD EMD Award from 2Q 98 to 4Q 98 is due to the MS II decision and contract strategy change from a cost plus contract to an 845 Other Transaction Agreement (OTA). The FAD PDR change from 4Q 98 to 1Q 99 is due to contract award change. The LPIA CDR was divided into H/W and S/W CDR. The H/W CDR was held as planned 1Q 98 and S/W CDR added in 2Q 98 as a result of increased software algorithm requirements and loss of key software personnel. FY99 reflects a change in FAD CDR from 1Q 99 to 2Q 99 due to the contract award change and PDR change in FY98. TAMMAC TECHEVAL moved from 3Q 99 to 4Q 99 to reflect the latest aircraft schedules. LPIA DT/OT schedule changed from 3Q 98 to 2Q 99 as a result of increased software algorithm requirements and turnover of key software personnel at the contract facility. LPIA 4Q 99 TECHEVAL start date moved from 7/99 to 8/99 as a result of the DT/OT schedule. TAWS PDR moved from 2Q to 3Q 99 as a result of aircraft OFP schedule changes. The GPWS CAT II DT changed from 2Q 98 to 3Q 99 as a result of aircraft OFP schedule changes. GPWS CAT II OT changed from 4Q 99 to 1Q 00 as a result of aircraft OFP schedule changes. FY 00 reflects a change in AMC&D DT to include F/A-18 3Q 00 and AV-8B 3Q 00 schedules separately. FY 01 reflects a change in TAWS OT from 3Q to 4Q 01 as a result of the OFP development schedule. AMC&D DT reflects a change to F/A-18 4Q 01 and AV-8B 2Q 01 to show schedules separately.

(U) Technical: Not applicable.

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**UNCLASSIFIED****EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET****DATE: February 1999****BUDGET ACTIVITY: 5****PROGRAM ELEMENT: 0604215N****PROJECT NUMBER: W0572****PROGRAM ELEMENT TITLE: Standards Development****PROJECT TITLE: Joint Services/Navy Standard  
Avionics Components and  
Subsystems****(U) C. OTHER PROGRAM FUNDING SUMMARY**

<u>Appn</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
APN BLI 057700	127,552	100,881	81,599	82,132	65,014	63,592	61,903	62,585	CONT.

Related RDT&E

(U) P.E. 0604574N (W0845)	1,101	4,971	0	0	0	0	0	0
(U) P.E. 0702207N (W2454)	0	6,445	1,733	576	766	0	0	0

(U) D. ACQUISITION STRATEGY: AMC&D is utilizing a Sole source to McDonnell Douglas Corp. (MDC), a wholly owned subsidiary of the Boeing Company, for prototype design using an 845 Other Transaction Agreement (OTA) and CP for E&MD and LRIP. MDC conducted a competition to potential suppliers and selected GDIS for the AMC and Honeywell for Displays.

**R-1 Item No. 84**  
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**EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET**

**DATE: February 1999**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROJECT NUMBER: W0572**

**PROGRAM ELEMENT TITLE: Standards Development**

**PROJECT TITLE: Joint Services/Navy Standard  
Avionics Components and  
Subsystems**

**(U) E. SCHEDULE PROFILE**

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>TO COMPLETE</u>
(U) Program Milestones	3Q MS II FAD (4/98)		1Q AMC&D PR (12/99) 3Q LPIA MS III (6/00)	3Q AMC&D MSIII (06/02) (AV-8B) 1Q AMC&D MSIII (12/03) (F/A-18) 1Q TAMMAC MSIII (10/00)
(U) Engineering Milestones		1Q FAD PDR (10/98) 1Q LPIA H/W CDR (10/97) 2Q LPIA S/W CDR (2/98) 1Q TAMMAC CDR (12/97)	2Q FAD CDR (2/99) 3Q TAWS F/A-18 (17C/18E) PDR (4/99) 4Q CNS/ATM PDRs (8/99)	
			2Q TAWS F/A-18 (17C/18E) CDR (1/00) 2Q JMPS PDR (1/00) 3Q JMPS CDR (5/00) 3Q CNS/ATM CDRs (4/00) 4Q FCAS PDR (6/00)	
				2Q FCAS CDR (1/01)

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**EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET**

**DATE: February 1999**

**BUDGET ACTIVITY: 5**

**PROGRAM ELEMENT: 0604215N**

**PROGRAM ELEMENT TITLE: Standards Development**

**PROJECT NUMBER: W0572**

**PROJECT TITLE: Joint Services/Navy Standard  
Avionics Components and  
Subsystems**

(U) E. SCHEDULE PROFILE Continued

FY 1998

FY 1999

FY 2000

TO COMPLETE

(U) T&E Milestones

3Q GPWS CAT II DT (15C OFF) (4/99-7/99)  
4Q TAMMAC DT/OT (8/98-4/99)

2Q LPIA DT-IIA/OT-IIA (2/99-7/99)  
4Q LPIA TECHEVAL/OPEVAL (8/99-5/00)  
4Q TAMMAC TECHEVAL (7/99-10/99)

1Q GPWS CAT II OT (15C OFF) (12/99-6/00)  
2Q TAWS DT (17C/18E OFF) (2/00-11/00)  
1Q TAMMAC OPEVAL (12/99-6/00)  
3Q AMC&D DT-IIA1/OT-IIA1 (7/00-2/01) (F/A-18)  
3Q AMC&D DT-11B1 (07/00-12/00) (AV-8B)

2Q CNS/ATM DT/OT (3/01-6/01)  
4Q CNS/ATM TECHEVAL (7/01-10/01)  
4Q TAWS OT (17C/18E) (7/01-9/01)  
4Q FCAS DT (7/01-10/01)  
2Q JMPS DT (03/01-05/01)  
4Q JMPS Segment OT (5/01-9/01)  
4Q AMC&D DT-IIA2 (9/01-12/01) (F-18)  
2Q AMC&D DT11B2/OT-11B1 (01/01)  
(AV-8B)

(U) Contract Milestones

4Q FAD 845 OTA Award (7/98)  
2Q CNS/ATM EMD Contract Awards (3/99)  
2Q AMC&D EMD Contract Award (1/00)  
2Q FCAS Contract Award (2/00)

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EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: Feb 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER: W0572  
PROJECT TITLE: Standard Avionics

<u>Cost Categories:</u>	<u>Contract Method &amp; Type</u>	<u>Performing Activity &amp; Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
AMC&D/E&MD Prime Contract	SS/ 845	Boeing, St. Louis, MO	6,418	15,475		13,724		0	35,617	TBD
AMC&D/E&MD Prime Contract	SS/ CP EMD	Boeing, St. Louis, MO	0	0		26,876	1/00	Cont.	Cont.	TBD
LPJA/E&MD Prime Contract	C/Cost Share	GEC, Wayne, NJ	5,281	1,166		50		0	6,398	N/A
TAMMAC/E&MD Prime Contract	SS/ CPIF EMD	Boeing, St. Louis, MO	17,701	6,110		1,690		0	25,501	22,911
CNS/ATM/E&MD Prime Contract	SS/ BOA	Litton Woodland Hills, CA	0	1,000	3/99	1,000		Cont.	Cont.	TBD
CNS/ATM/E&MD Prime Contract	C/BOA	Allied Signal, Towson, MD	0	2,000	3/99	500		Cont.	Cont.	TBD
FCAS/E&MD Prime Contract	TBD	TBD	0	0		1,500	2/00	Cont.	Cont.	TBD
Award Fees	Misc	Misc	0	0		0		0	0	
Systems Engineering	WX	NAWC-AD PAX		1,000	1/99					
Systems Engineering	WX	NAWC-WD, PT MUGU	0	0		1,090	11/00	Cont.	Cont.	
Systems Engineering	WX	NAWC-WD, PT MUGU	0	0		1,513	11/00	Cont.	Cont.	
<b>Misc</b>	Misc	Misc	42,385	7,139		8,934		Cont.	Cont.	
<b>Subtotal Product Development</b>			<b>71,785</b>	<b>33,890</b>		<b>56,877</b>		<b>Cont.</b>	<b>Cont.</b>	

Remarks: \*P.E. 0604574N, Project Unit W0845 is being combined with this project unit beginning FY00 and out. Target Value of Boeing 845 Contract includes funds from both W0845 and W0572. GEC Cost Share contract does not have a Target Value. This contract has been changed from a CPIF to a Cost Share with a 25/75 ratio and a total liability to the government of \$6,200K . The additional \$198K is budgeted for anticipated mods to be exercised for additional tasking through GEC for OT support. Boeing Sole Source EMD contract reflects a delta in Total Cost and Target Value in concert with Management EAC. EAC includes \$1,692K unrecoverable cost overrun and \$898K risk provision.

Misc	Misc	Misc	12,849	2,483		2,727		Cont.	Cont.	
<b>Subtotal Support</b>			<b>12,849</b>	<b>2,483</b>		<b>2,727</b>		<b>Cont.</b>	<b>Cont.</b>	

Remarks

**Note:** PE 0604574N, Project unit W0845 is combined with P.E. 0604215N, project unit W0572 beginning FY00. With this combination, Flight Avionics Displays (FAD) becomes Advanced Mission Computer and Displays (AMC&D).

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## EXHIBIT R-3, FY 2000/2001 RDT&E,N COST ANALYSIS

DATE: Feb 1999

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604215N

PROJECT NUMBER:

W0572

PROJECT TITLE:

Standard  
Avionics

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems T&E/OT&E	WX	NAWC-AD PAX	0	0		1,700	12/00	Cont.	Cont.	
Systems T&E/OT&E	WX	NAWC-AD PAX	0	1,041	10/99	200	10/00	Cont.	Cont.	
Misc	Misc	Misc	13,519	2,761		2,082		Cont.	Cont.	
<b>Subtotal Test &amp; Ev</b>			<b>13,519</b>	<b>3,802</b>		<b>3,982</b>		<b>Cont.</b>	<b>Cont.</b>	

Remarks

Misc	Misc	Misc	0	0		0		Cont.	Cont.	
<b>Subtotal Management</b>			<b>0</b>	<b>0</b>		<b>0</b>		<b>Cont.</b>	<b>Cont.</b>	

Remarks

SBIR Assessment				831						
<b>Total Cost</b>			<b>98,166</b>	<b>41,006</b>		<b>63,586</b>		<b>Cont.</b>	<b>Cont.</b>	

**Note:** PE 0604574N, Project unit W0845 is combined with P.E. 0604215N, project unit W0572 beginning FY00. With this combination, Flight Avionics Displays (FAD) becomes Advanced Mission Computer and Displays (AMC&D).

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